REMARKS

In the Office Action, the Examiner indicated that claims 1 through 18 are pending in the application and the Examiner objected to claims 2-5, 8-11, and 14-17, and rejected claims 1, 6, 7, 12, 13, and 18. The Examiner also objected to the abstract because it exceeds 150 words.

Allowable Subject Matter

On page 2 of the Office Action, the Examiner indicated that claims 2-5, 8-11, and 14-17 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank for Examiner for this indication of allowability. At this time, applicants elect to pursue allowance of the independent claims and thus defers rewriting of the objected-to claims until issues with respect tot he independent claims have been resolved.

The Abstract

Applicants have amended the Abstract to reduce the number of words in accordance with M.P.E.P. §608.01(b).

Claim Rejections, 35 U.S.C. §102

In item 6 on page 4 of the Office Action, the Examiner rejected claims 1, 6, 7, 12, 13

and 18 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,047,289 to Thorne

("Thorne").

The Present Invention

In accordance with the present invention, when multiple copies of a software program

reside on a single machine and need to cooperate with each other to coordinate certain aspects

of their execution, an election process is conducted to automatically elect one of the copies as

a master or supervisor copy, with the non-elected copies becoming slave or subordinate

copies. Thus, the master-slave relationship is automatically set up by the programs without

human intervention.

In a preferred embodiment the election process depends on the presence of a TCP/IP

protocol stack on the machine, and depends on its capability to enforce the restriction that only

one copy of the program (an operating system process) can create a binding between a TCP

socket (a standard TCP/IP programming abstraction) and a given TCP port number. In this

preferred embodiment, each program creates the TCP socket, and requests the TCP/IP stack to

bind the socket to the same configured port number, referred to herein as the "supervisor port

number". Since only one of the programs can succeed in being assigned the supervisor port

number, the first program to have its socket assigned to the supervisor port number becomes

the supervisor (e.g., the master) program; the other programs respond to the failure of their

request by assuming the role of a subordinate (e.g., a slave) program.

Once the supervisor has been elected, each subordinate program creates an intra-machine TCP connection to the supervisor. These connections logically represent the master-slave hierarchy between the programs, and are also used to perform any proprietary protocol necessary for these programs to cooperate with each other. In addition, however, the intra-machine TCP connections also perform the efficient detection of supervisor failure by the subordinate programs so that they may initiate a re-election when necessary. To facilitate this function, each copy of the program, both the supervisor and the subordinates, use a standard socket programming API call that blocks its execution until it receives some data from the partner, at its end of the master-slave connection. Once the program associated with one end of the connection fails, the event is detected by the TCP/IP stack which immediately informs the program associated with the other end of the connection that the connection has been terminated, by unblocking its API call.

U.S. Patent No. 6,047,289 to Thorne

U.S. Patent No. 6,047,289 to Thorne ("Thorne") teaches a computer system that comprises a management service having a plurality of objects. A master object in the management service includes a source attribute with associated data. One or more slave objects in the management service correspond to the master object and are distinct from the master object. A piece of software called a "propagation agent" (Figure 4) can figure out which locations to replicate a master catalog to. The master-slave hierarchical relationship between the management objects is manually set up by a human administrator, to control replication of a catalog. Once the master-slave relationship is set up, it does not change.

The Cited Prior Art Does Not Anticipate the Claimed Invention

The MPEP and case law provide the following definition of anticipation for the

purposes of 35 U.S.C. §102:

> "A claim is anticipated only if each and every element as set forth in the claim
> is found, either expressly or inherently described, in a single prior art
> reference." MPEP §2131 citing *Verdegaal Bros. v. Union Oil Company of
> California*, 814 F.2d 628, 631, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987)

The Examiner Has Not Established a *prima facie* Case of Anticipation

As noted above, the present claimed invention includes a hierarchical master-slave

relationship between <u>programs</u>. Each of the programs has sufficient "intelligence" to perform

management operations. No separate software agent, such as the propagation agent of Thorne,

is required to interpret the hierarchy. Thus, the master-slave relationship is automatically set

up by the programs themselves with no human intervention.

The present claimed invention is specifically directed to the coordination of multiple

instances of the same software <u>program</u>. This is clearly distinct from Thorne, which deals

with multiple <u>objects</u>. Objects are passive data structure with no associated code

(intelligence). Programs, on the other hand, contain code, with intelligence, and thus Thorne

does not anticipate (nor suggest) the claimed invention.

As a result of having intelligence, the programs themselves can automatically elect one

of the software instances as the supervisor program. To more clearly claim this automatic

aspect of the present invention, applicants have amended claim 1 to more specifically recite the

automatic election of one of the software instances as the supervisor program. Thus, in

addition to the reasons set forth above, the specific claiming of the automatic election of the

present invention patentably defines the present invention over Thorne. Since each of the independent claims clearly recite the coordination of programs and the automatic election of a supervisor program, it is submitted that the present claimed invention patentably defines over Thorne.

Regarding claim 6, claim 6 specifically claims the step of creating a registry, within the supervisor process, containing a unique entry for each software instance residing on the machine. The "registry" in the context used in Thorne is nothing but attributes of objects for storing values, a well-known concept. In the present claimed invention, the registry is a database of services, offered by software programs. While the concept of a registry as a database of services, offered by a software program, is a well known concept in computer science, claim 6 refers to a single machine (node) with multiple instances of a software program running in it, and that the registry of those programs, which can tell an external client of those programs what they are, is resident inside the automatically elected supervisor. This ensures that if the supervisor program is terminated for some reason, then the registry is destroyed at the same time, preventing any inconsistent information that could remain if the registry were stored external to the supervisor program itself. This novel aspect, claimed in claim 6, is neither taught nor suggested by Thorne. Thus, in addition to the reasons set forth above, claim 6 and all claims depending therefrom patentably define over Thorne for these reasons.

For the above reasons, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims based upon U.S. Patent No. 6,047,289 to Thorne.

Conclusion

The present invention is not taught or suggested by the prior art. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims. An early Notice of Allowance is earnestly solicited. The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 09-0461.

Respectfully submitted

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Date

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